

## **200 EARTHWORK**

### **Item 201 Clearing and Grubbing**

Add:

#### **201.021 Inspection by Tree Professional.**

A Forester or Arborist will inspect any tree the Engineer deems should not be removed during the work to determine its relative structural safety and potential chances of surviving three years after this earthwork. Treat any tree that the Forester or Arborist concludes is safe and likely to survive in accordance with the standards specified in Item 666. The treatment designated by the Forester or Arborist is not a guarantee that the tree will survive but is a precaution to help it survive the Earthwork.

#### **201.03 Clearing and Grubbing.** Add to the second to last paragraph:

Prune branches of trees extending over the roadbed in accordance with the standards specified in 666.03 and 666.04.

### **Item 202 Removal of Structures and Obstructions**

#### **202.02 General Construction Requirements.** Add to first paragraph:

Remove all abandoned utility service boxes (curb or roadway) to one foot (305 mm) below the existing surface. Restore disturbed pavement, walk, driveway or sod so it conforms with adjacent surface(s). Replace disturbed concrete walk and/or driveway from joint to joint. Remove and store in the right-of-way existing street signs, traffic markers, and other similar objects within the limits of construction for disposition, as directed by the Engineer.

Abandon sewers and drainage structures in accordance with the provisions of 202.041.

#### **202.04 Pipe Removal.** Add:

Include in the unit price bid for the various sewer items the removal, where required, of all existing house connections which include sanitary, yard, roof, basement or other similar pipe drains within the construction limits, unless otherwise itemized for payment in the Proposal for Item 202 "Pipe Removal - House Connections."

If the Contract requires installation of new conduit in about the same alignment as the existing pipe, then include as incidental the removal of the existing pipe in the price bid for various items.

Add:

#### **202.041 Abandoned Sewers and Drainage Structures.**

All existing sewers, manholes, catch basins and inlets to be abandoned or removed as part of this project are noted on the plans.

Abandon noted manholes, catch basins and inlets in accordance with the provisions of Item 202.12.

Remove noted manholes, catch basins and inlets in accordance with the provisions of Item 202.11.

Plug or seal noted sewers where they join manholes, catch basins or inlets. Plug or seal at both ends, where broken into, all existing sewers encountered in construction operations that are inactive or are to be abandoned before proceeding with backfilling and as determined by the Engineer.

Seal pipe one foot (305 mm) or less in diameter with a suitable precast concrete or vitrified clay stopper properly cemented into place. Seal pipe or masonry sewers larger than one foot (305 mm) in diameter at the required locations with masonry bulkheads of brick, stone or concrete having a thickness of one-half of the sewer diameter, with a minimum thickness of one foot (305 mm) and a maximum thickness of two feet (610 mm).

Seal all sewers to be abandoned one foot (305 mm) or less in diameter. Seal and fill all sewers larger than one foot (305 mm) in diameter, as indicated in the Contract plans and/or Contract specifications. Filling may be done hydraulically (using sand or gravel) or by mud jacking (using suitable clay). Fill material must be approved by the Engineer before it is placed. Place enough approved fill material to occupy at least 75 percent of the sewer cross sectional area with solids.

The Contractor has the option to remove existing sewers noted on the Plans to be sealed and filled.

The unit price bid for the various sewer items may include payment for sealing, or sealing and filling abandoned sewers, or for removing abandoned sewers in lieu of sealing and filling same, unless the Proposal for Item 202 "Seal and Abandon Existing Sewers" or Item 202 "Fill, Seal and Abandon Existing Sewers" includes the item.

Add:

#### **202.051 Removing Tree Guards.**

**Description.** Furnish all labor, tools, materials, and equipment necessary for removing tree guards from existing tree grates.

**Construction.** Remove both halves of the tree guard where it is attached to the tree grate. This usually involves the removal of three bolts located on the underside of the grate.

Reset the grate in its original condition. Unless the Engineer otherwise instructs, deliver guards to a specified storage site located within the City limits. Take special care to prevent damage to the tree. Correct or compensate for any tree damage caused by this work as the Supervisor of Urban Forestry determines.

When encountering situations where the tree has physically grown around or through the metal and the removal of such metal may cause harm to the tree, Contact the Supervisor of Urban Forestry before proceeding.

Add:

#### **202.052 Removing Tree Grate From Existing Tree Grate Frame.**

**Description.** Furnish all labor, tools, material, and equipment necessary for removing existing tree grates, including removing bolts from underside of grate. Furnish and install plywood inside grate frame to maintain sidewalk surface.

**Materials.** Furnish and install 3/4 inch (20 mm) thick plywood, cut to exact dimensions of the grate to be removed. Set the plywood flush with the top of the frame. Treat the plywood with a non-slip surface such as friction tape. Cut the tree opening to allow a uniform six inch (150 mm) space between tree and plywood.

**Construction.** Carefully lift and support the grate and remove the two bolts that hold the halves together. The grate can then be removed. Install plywood inside grate frame. Dispose of broken grates. Haul intact salvaged grates to a City facility. Take special care to prevent damage to the tree. Correct or compensate for any tree damage caused by this work as the Supervisor of Urban Forestry determines.

Add:

#### **202.053 Street Car Rails Removed**

This item will cover the removal of any abandoned street car base and rails encountered within the confines of the trench during construction of proposed water main(s). The Contractor shall be compensated for this work per linear foot of proposed water main trench in which the rails, base, and ties are to be removed.

#### **202.06 Buildings Demolished.** Add to third paragraph:

Remove portions of all buildings that are located in the Right-of-Way to a minimum of six feet (1.8 m) below the proposed grade. Remove all cellar doors, coal holes, or basement encroachments in the Right-of-Way and fill resulting void(s) with Controlled Low Strength Material (CLSM) meeting the requirements of Item 613. Restore disturbed pavement, walk, driveway or sod so it conforms with adjacent surface(s). Replace all disturbed sidewalks and/or driveways from joint to joint.

**202.11 Manhole, Catch Basin and Inlet Removed.** Add:

Carefully remove and store castings for reuse as the Engineer specifies, or for delivery to a City facility, unless otherwise directed by the Engineer.

The City will not pay for removal under this item if the Contract calls for a new structure where it is necessary to remove the existing structure.

Delete last paragraph and replace with:

Fill resulting void(s) with Controlled Low Strength Material (CLSM) meeting the requirements of Item 613. Restore disturbed pavement, walk, driveway or sod so it conforms with adjacent surface(s). Replace all disturbed sidewalks and/or driveways from joint to joint.

**202.12 Manhole, Catch Basin and Inlet Abandoned.** Add:

Carefully remove and store castings for reuse as the Engineer specifies, or for delivery to a City facility, unless otherwise directed by the Engineer.

Delete last paragraph and replace with:

Fill resulting void(s) with Controlled Low Strength Material (CLSM) meeting the requirements of Item 613. Restore disturbed pavement, walk, driveway or sod so it conforms with adjacent surface(s). Replace all disturbed sidewalks and/or driveways from joint to joint.

**202.14 Basis of Payment.** Add the following items:

Item	Unit	Description
202	Each	Removing Tree Guards
202	Each	Removing Tree Grate From Existing Tree Grate Frame
202	Lump Sum	Seal and Abandon Existing Sewers
202	Cubic Yard (Cubic Meter)	Fill, Seal, and Abandon Existing Sewers
202	Linear Foot	Removing Street Car Base and Rail (for GCWW Projects)

## **Item 203 Roadway Excavation and Embankment**

### **203.01 Description.** Add to the second paragraph:

Excavation within streets including removing flexible base pavement (i.e. macadam, asphalt, brick, granite, wood block, cobblestone, etc.), and repairing shoulders and other areas as directed by the Engineer, is considered unclassified excavation.

### **203.04 General.**

#### **A. Drainage and Maintenance of the Work.** Delete last paragraph and substitute:

Where earthwork operations encounter inactive or abandoned pipe lines, plug or seal and cover them in accordance with 202.041.

Add the following:

#### **Securing Excavated Areas within the Public Right-of-Way**

Excavations within the public right-of-way are necessary to perform a wide variety of important work. Recognizing that any work within the right-of-way poses increased risk to workers and travelers alike and that this work disrupts public use and enjoyment of this space, contractors performing work within the public right-of-way must take all necessary steps to ensure public safety and minimize the duration of their work. As a minimum, contractors performing work within the public right-of-way must take the following measures:

##### **A. Excavations within Roadway Areas**

Secure excavations within the roadway area at all times in accordance with an approved maintenance of traffic plan. To promote public safety, the contractor shall provide, install, and maintain at all times, all necessary traffic control devices needed to ensure that traffic is safely detoured around the work area. Unless otherwise permitted, the excavation shall be properly covered with steel plating when not attended.

##### **B. Excavations within the Sidewalk Space (Sidewalk space is defined as public space between the edge of pavement and the right-of-way line)**

Maintain pedestrian protection and pedestrian access at all times in accordance with City Supplement Section 614.07. In addition, unattended excavations shall be secured as follows:

1. If possible all excavations shall be covered with a steel plate or approved equal to provide a safe, walkable, skid-proof surface. Asphalt wedges may be required along edges of plates to prevent tripping hazards.
2. Excavations more than one foot in depth.  
Secure excavation as required under **A. Excavations within Roadway Areas.**
3. Excavations less than one foot in depth.

Secure the entire perimeter of the work area (at least one foot beyond the limits of excavation) with plastic mesh fencing (minimum of 3' high) mounted on weighted drums or fence posts with Sidewalk Closed Sign at each end.

4. Temporary sidewalk restoration

Sidewalks may be temporarily restored with asphalt and opened to pedestrians if constructed in accordance with the Street Restoration Manual, Permit, or Contract requirements.

**203.05 Embankment Construction Methods.** Add at the end of the first paragraph:

Unless otherwise specified, backfill all trenches, holes, pits, and other depressions within the limits of the existing or proposed Right-of-Way with Controlled Low Strength Material (CLSM) meeting the requirements of Item 613.

Add at end of section:

When embankments are less than three feet (1 m) in depth and are constructed over existing pavement, or regardless of embankment depth, if the grade of the existing pavement to be covered is greater than eight percent, break the pavement sufficiently to permit the flow of water through the fractures, and to eliminate a slip plane. The maximum dimension of unbroken pavement shall be five feet. (1.5 m)

Replace all damaged or displaced sections of embankment unless the damage is attributable to movement of the natural ground supporting the embankment. Notify the Engineer immediately if movement of the natural ground is suspected.

**203.06 Spreading and Compacting.**

**B. Shale.** Delete and substitute:

The Engineer will test for soft shale according to 703.16.

**Soft Shale.** Compact soft shale for embankment construction with an approved vibratory tamping-foot roller in conjunction with a static tamping-foot roller. The minimum weight for the static tamping-foot roller is 30 tons (27 metric tons). The minimum total compactive effort for the vibratory tamping-foot roller is 27.5 tons (244 kN). The total compactive effort is that portion of the static weight acting upon the unsprung compaction drum added to the centrifugal force provided by that drum. If the Manufacturer's charts do not list the static weight acting upon the compaction drum, weigh the roller, add the weight to the centrifugal force, and rate the roller in accordance with the Construction Industry Manufacturers Association, CIMA. The minimum projection of each tamping foot on the static roller is six inches (150 mm). The minimum projection of each tamping-foot on the vibratory tamping-foot roller is four inches (100 mm). The minimum surface area of the end of each foot on both tamping-foot rollers is 5-1/2 square inches (3,550 mm<sup>2</sup>).

Place soft shale in eight-inch (200 mm) maximum loose lifts, and compact to at least 95

percent of maximum dry density. Control the moisture content within -2 and +1 percentage points of optimum moisture content. The testing agency will measure the density with a calibrated nuclear gauge using the direct transmission mode.

Apply water to the shale in the cut to accelerate the slaking action and again prior to diskings and compaction to facilitate the compaction. Distribute the water by an approved method, which provides uniform application of the required quantity of water. Uniformly incorporate the water throughout the entire lift by a multiple gang disk with a minimum disk wheel diameter of 24 inches (600 mm).

Unless otherwise approved in writing, compact each embankment lift with a minimum of three passes with the static roller and a minimum of two passes with the vibratory roller. Blade the material before using the vibratory tamping-foot roller. The maximum roller speed is three mph (5 km/h) during these passes. Adjust the number of passes upward if necessary to obtain to the specified density and moisture controls in 203.07. The City will make no additional compensation for additional passes as specified herein.

**Shale and Thinly Layered Limestone.** The City will allow shale and thinly bedded limestone in the construction of embankment with the following conditions:

Observe all requirements for Soft Shale, except the minimum number of static roller passes is six and the minimum number of vibratory tamping-foot roller passes is two.

Encase the slopes with a minimum of ten feet (3 m) of relatively impervious, non-shale, non-erodible material.

The maximum size of limestone in the mixture is 6 inches (150 mm) in thickness and 18 inches (500 mm) in any other dimension.

The City may waive the requirement for field density tests if the material is too intermixed with limestone fragments to permit accurate results.

Add:

## **Item 210 Special Excavation**

**210.01 Description.** Special excavation is excavation that is not included in item 203 Roadway Excavation and Embankment or Item 503 Excavation for Structures, and that is not an integral part of other Contract Items. Special Excavation includes outlet trenches, test holes, removing unsuitable material below the foundation in trenches or other excavations as shown on the plans or as directed by the Engineer. This work includes excavation, trimming and grading, sheeting and bracing, pumping, draining, backfilling and disposal of surplus materials.

**210.02 Construction Requirements.** Perform Special Excavation as shown on the Plans, or as the Engineer orders. Neatly trim outlet trenches and grade to the cross section indicated or ordered. Where test holes or other special excavations are located between curb lines, compact the backfill in accordance with 203.

**210.03 Method of Measurement.** The City will measure the cubic yards (m<sup>3</sup>) of Special Excavation based on the material volume (in its original position) using the average end-area method.

**210.04 Basis of Payment.** The City will not make separate payment for trimming and grading, sheeting and bracing, pumping, draining, or disposal of surplus materials incidental to this work. The City will pay only for the Special Excavation indicated on the Plans, called for in the Special Provisions, or ordered by the Engineer. The City will pay for accepted quantities at the Contract prices as follows:

Item	Unit	Description
210	Cubic Yards (Cubic Meters)	Special Excavation

### **Item 211 Special Fill Materials**

**211.01 Description.** Furnish and place Special Fill material upon the express direction of the Engineer when the Work requires this particular type of material and it is not available from excavation on the improvement. Special Fill material is granular material as defined in 703.11 that will compact solidly under wetting and rolling. Place Special Fill material in strict accordance with the applicable provisions of 603.10 and 703.11.

**211.02 Method of Measurement.** The City will measure Special Fill material by the number of tons (metric tons) incorporated in the complete and accepted work. Turn in to the Engineer each day certified weight bills showing the number of tons of material furnished. The foreman on the job and the Inspector must sign each slip.

Where the Special Fill material is used to backfill a sewer trench, the City will measure the number of tons (metric ton) used above the initial backfill one foot (300 mm) above the pipe, to the subgrade and for the maximum trench width allowed for sewers in street area, as shown on Standard Drawing Acc. No. 49032. For conversion of volume to tons (metric tons) for payment under this Item, Bank Run Gravel is considered to weigh 3,400 pounds per cubic yard (1,179 kg/m<sup>3</sup>).

**211.03 Basis of Payment.** The City will pay for accepted quantities at the Contract prices as follows:

Item	Unit	Description
211	Tons (Metric Tons)	Special Fill Material